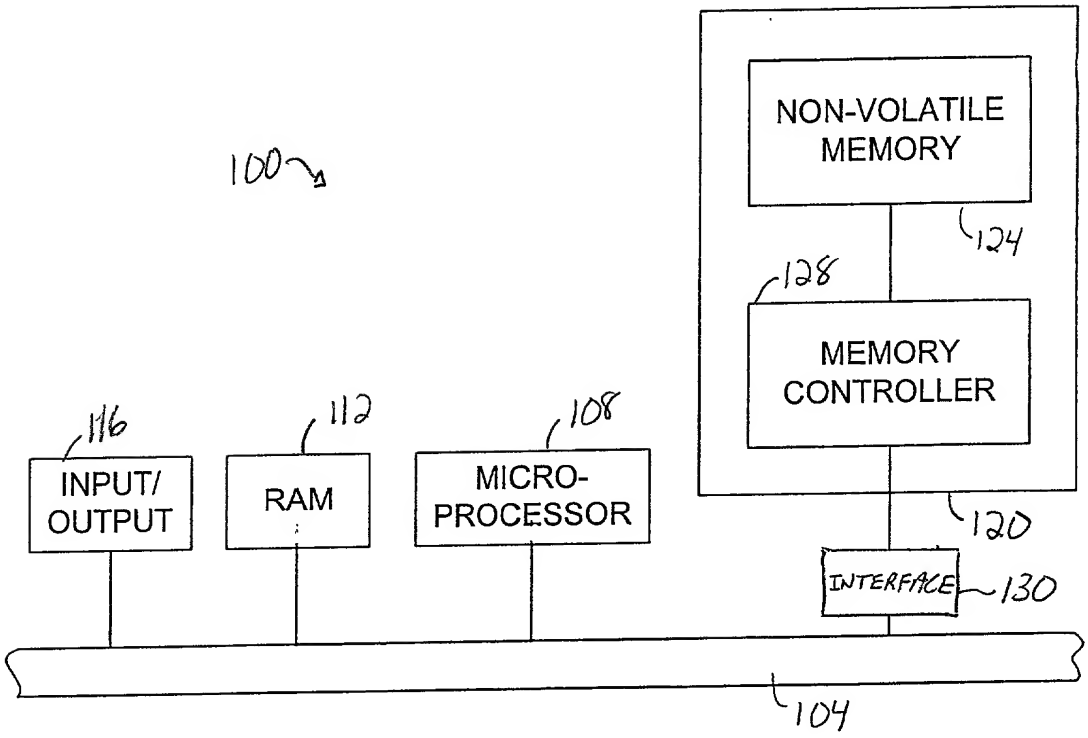

100
NON-VOLATILE MEMORY
124
128
MEMORY CONTROLLER
120
INTERFACE
130
116
INPUT/ OUTPUT
112
RAM
108
MICRO-PROCESSOR
104

Fig. 1

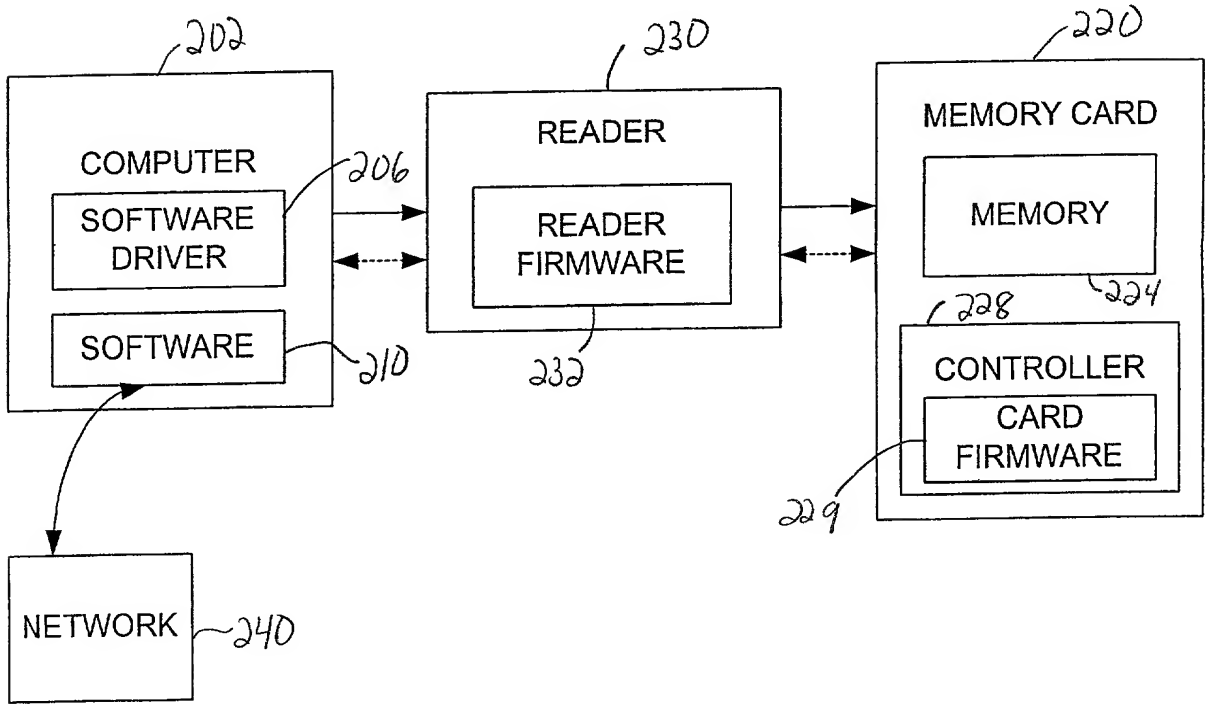

202
COMPUTER
206
SOFTWARE DRIVER
SOFTWARE
210
230
READER
READER FIRMWARE
232
220
MEMORY CARD
MEMORY
224
228
CONTROLLER
CARD FIRMWARE
229
NETWORK
240

Fig. 2

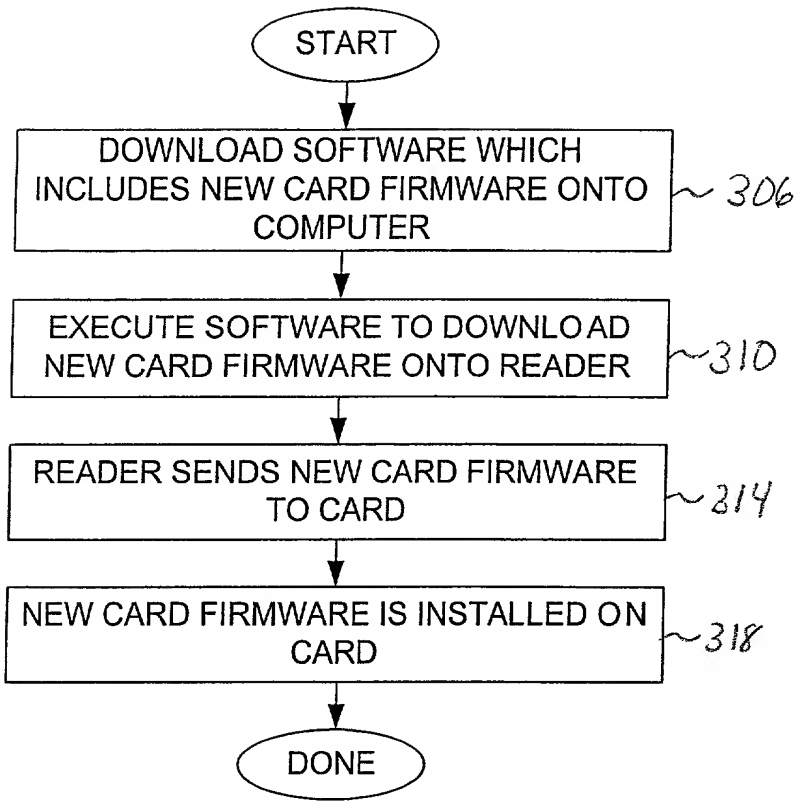

START
DOWNLOAD SOFTWARE WHICH INCLUDES NEW CARD FIRMWARE ONTO COMPUTER
306
EXECUTE SOFTWARE TO DOWNLOAD NEW CARD FIRMWARE ONTO READER
310
READER SENDS NEW CARD FIRMWARE TO CARD
314
NEW CARD FIRMWARE IS INSTALLED ON CARD
318
DONE
302

Fig. 3

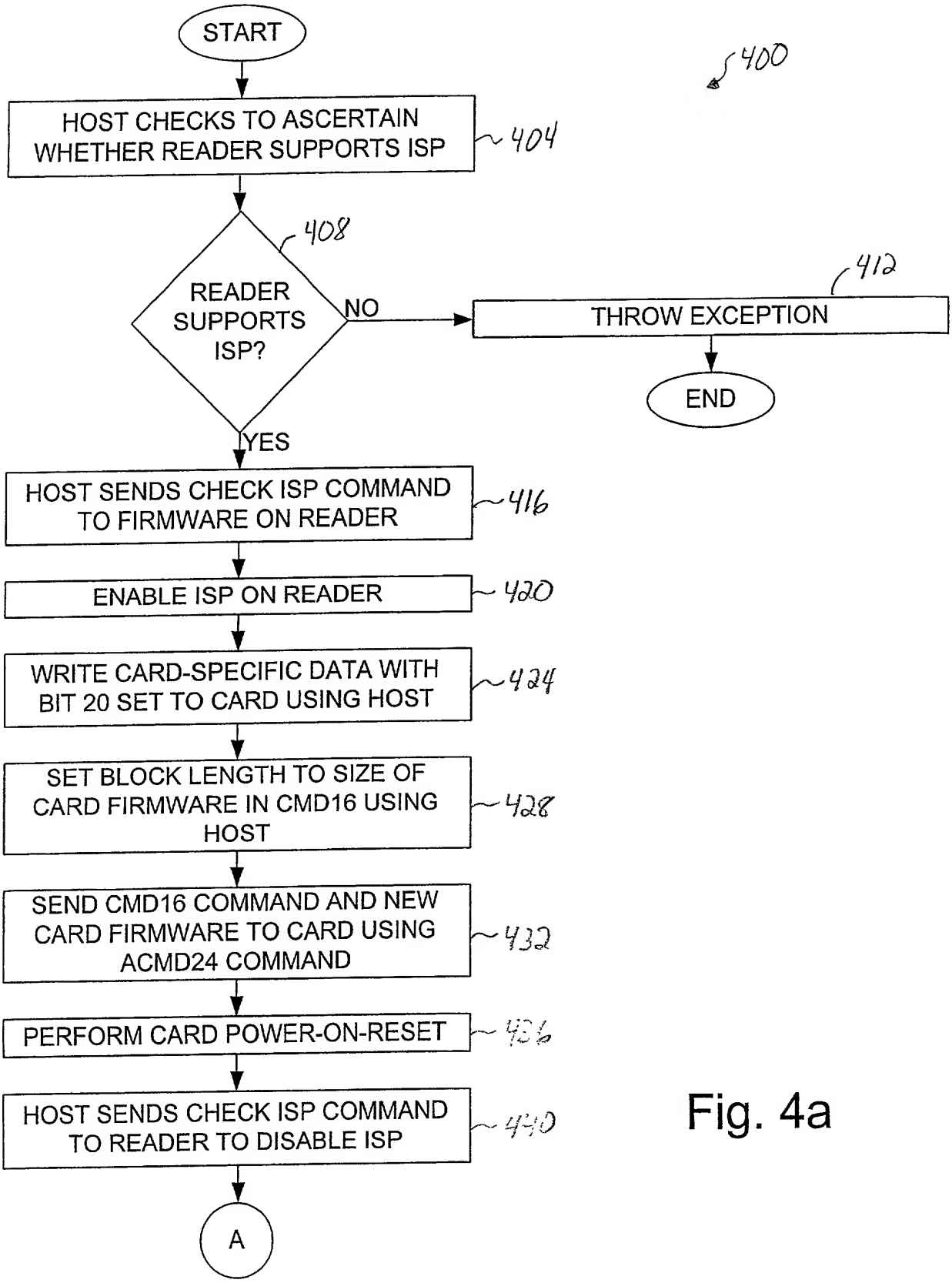

START
400
HOST CHECKS TO ASCERTAIN WHETHER READER SUPPORTS ISP
404
408
READER SUPPORTS ISP?
NO
412
THROW EXCEPTION
END
YES
HOST SENDS CHECK ISP COMMAND TO FIRMWARE ON READER
416
ENABLE ISP ON READER
420
WRITE CARD-SPECIFIC DATA WITH BIT 20 SET TO CARD USING HOST
424
SET BLOCK LENGTH TO SIZE OF CARD FIRMWARE IN CMD16 USING HOST
428
SEND CMD16 COMMAND AND NEW CARD FIRMWARE TO CARD USING ACMD24 COMMAND
432
PERFORM CARD POWER-ON-RESET
436
HOST SENDS CHECK ISP COMMAND TO READER TO DISABLE ISP
440
A

Fig. 4a

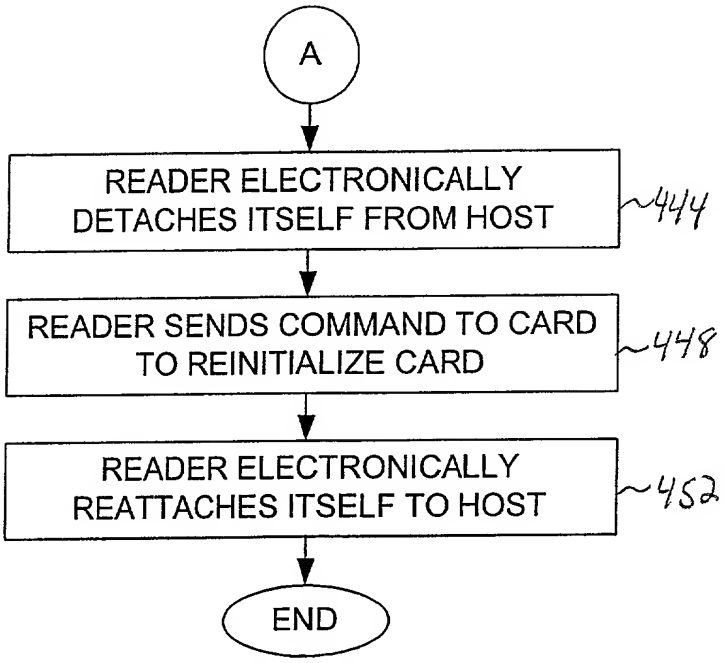

A
READER ELECTRONICALLY DETACHES ITSELF FROM HOST
444
READER SENDS COMMAND TO CARD TO REINITIALIZE CARD
448
READER ELECTRONICALLY REATTACHES ITSELF TO HOST
452
END

Fig. 4b

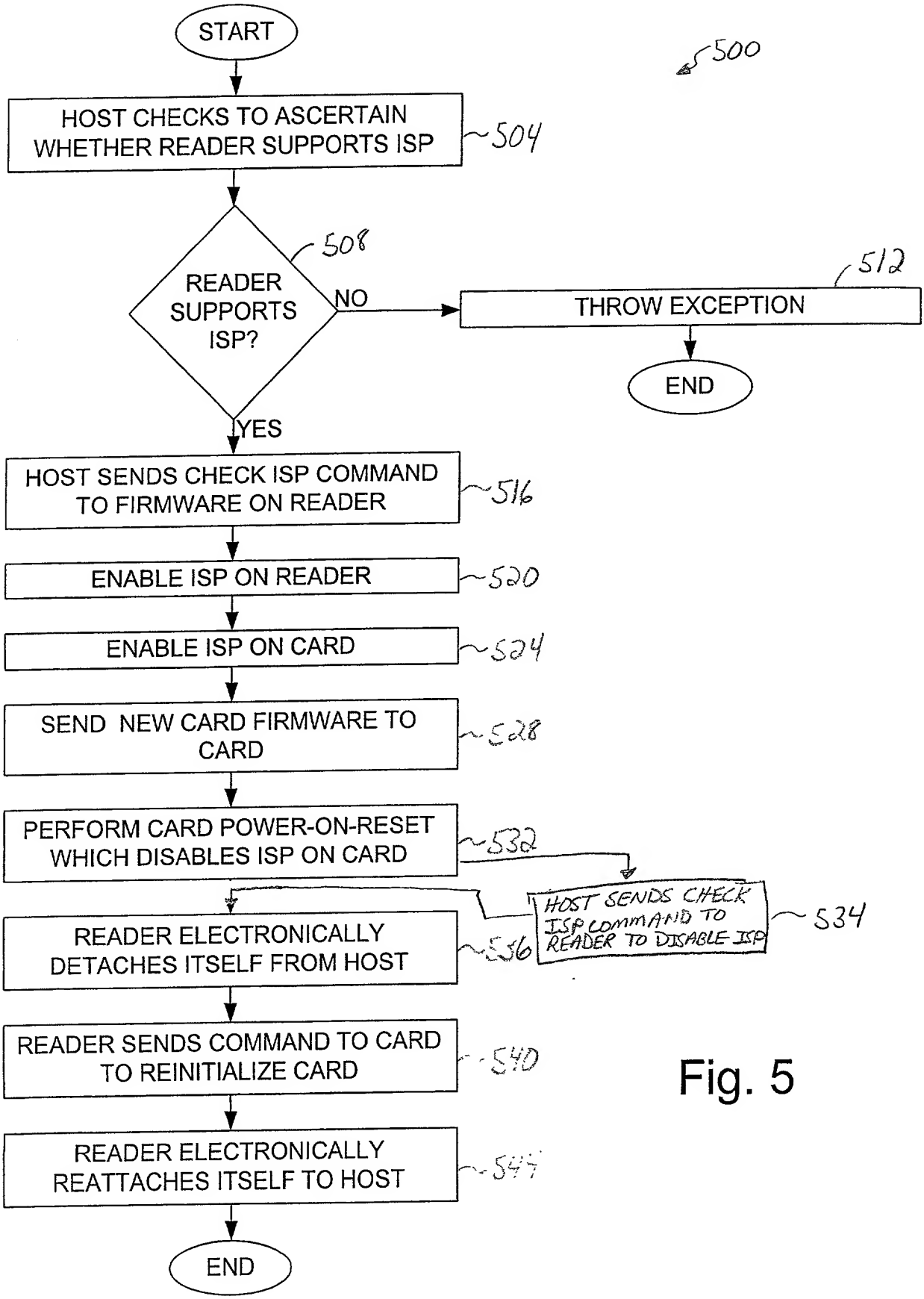
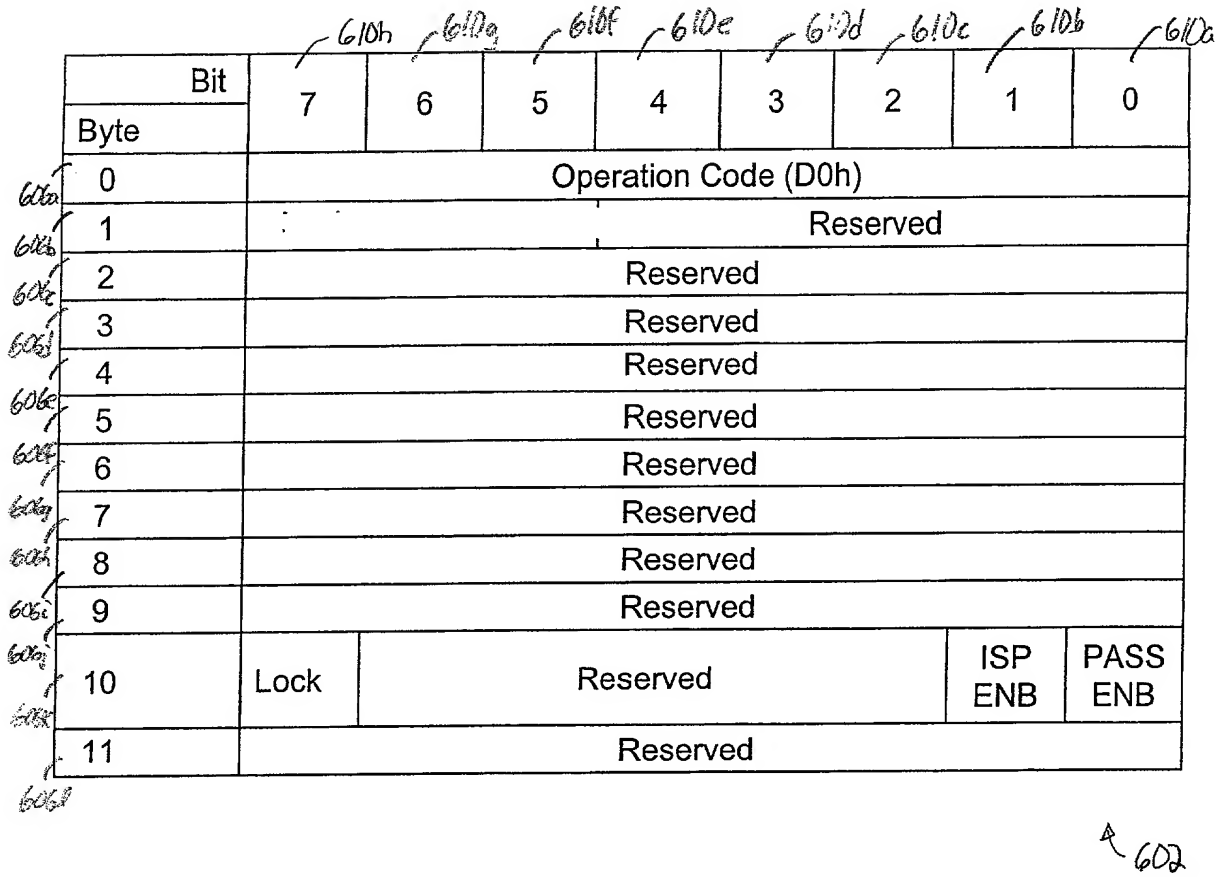
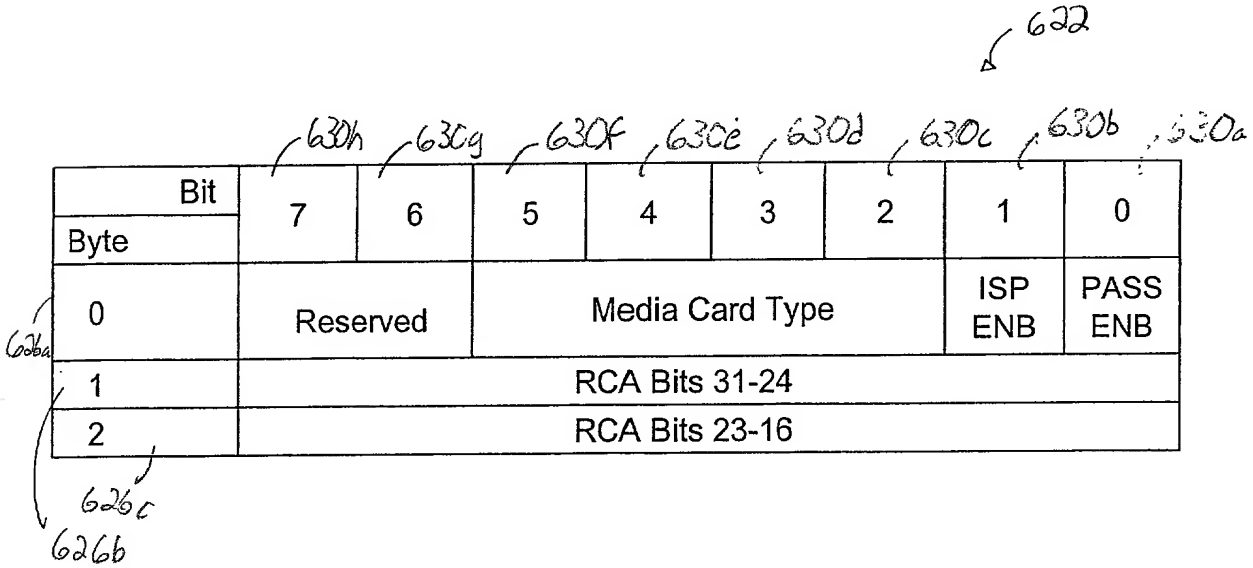

START
500
HOST CHECKS TO ASCERTAIN WHETHER READER SUPPORTS ISP
504
508
READER SUPPORTS ISP?
NO
512
THROW EXCEPTION
END
YES
HOST SENDS CHECK ISP COMMAND TO FIRMWARE ON READER
516
ENABLE ISP ON READER
520
ENABLE ISP ON CARD
524
SEND NEW CARD FIRMWARE TO CARD
528
PERFORM CARD POWER-ON-RESET WHICH DISABLES ISP ON CARD
532
HOST SENDS CHECK ISP COMMAND TO READER TO DISABLE ISP
534
READER ELECTRONICALLY DETACHES ITSELF FROM HOST
536
READER SENDS COMMAND TO CARD TO REINITIALIZE CARD
540
READER ELECTRONICALLY REATTACHES ITSELF TO HOST
544
END

Fig. 5



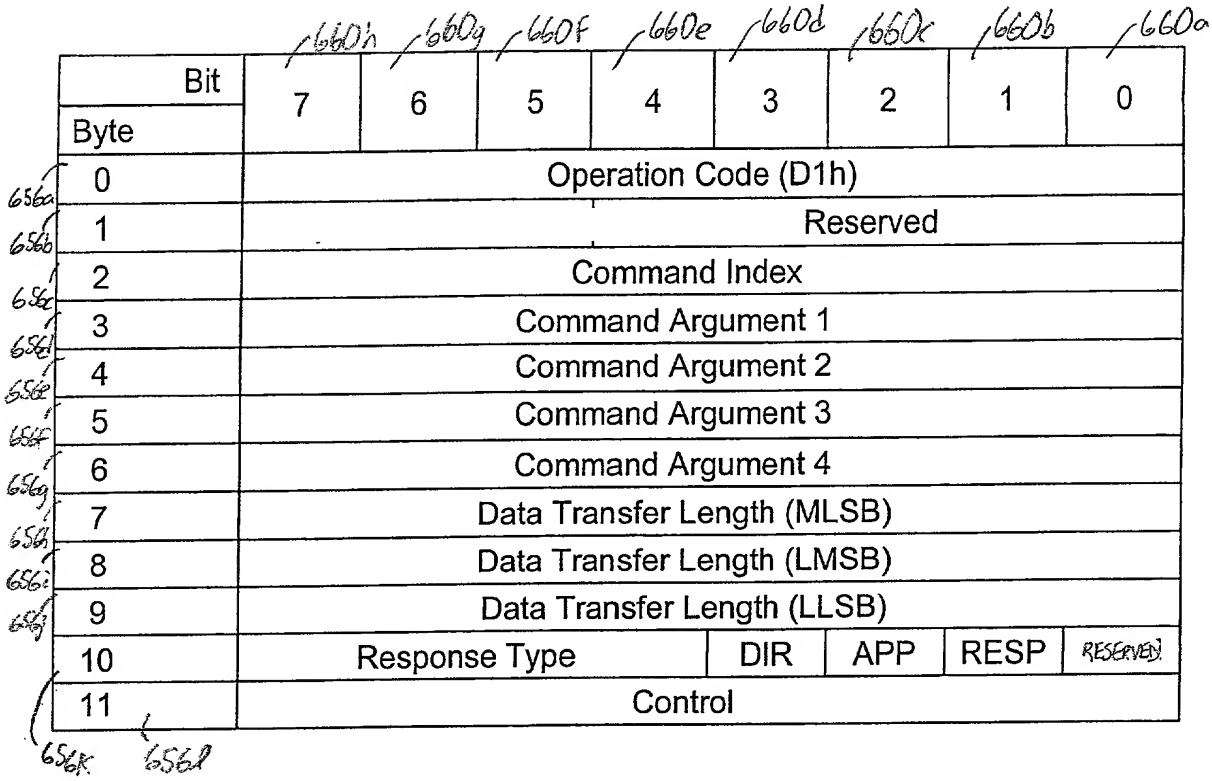
Bit / Byte	7	6	5	4	3	2	1	0
0	Operation Code (D0h)							
1	Reserved							
2	Reserved							
3	Reserved							
4	Reserved							
5	Reserved							
6	Reserved							
7	Reserved							
8	Reserved							
9	Reserved							
10	Lock	Reserved					ISP ENB	PASS ENB
11	Reserved							

Fig. 6a



Bit / Byte	7	6	5	4	3	2	1	0
0	Reserved		Media Card Type				ISP ENB	PASS ENB
1	RCA Bits 31-24							
2	RCA Bits 23-16							

Fig. 6b



Byte	Bit 7	6	5	4	3	2	1	0
0	Operation Code (D1h)							
1	Reserved							
2	Command Index							
3	Command Argument 1							
4	Command Argument 2							
5	Command Argument 3							
6	Command Argument 4							
7	Data Transfer Length (MLSB)							
8	Data Transfer Length (LMSB)							
9	Data Transfer Length (LLSB)							
10	Response Type				DIR	APP	RESP	RESERVED
11	Control							

Fig. 6c

Byte \ Bit	7	6	5	4	3	2	1	0
0	Operation Code (D2h)							
1	Reserved							
2	'S'							
3	'D'							
4	Reserved (Error Register)							
5	Sector Count Register/Feature Register							
6	Sector Register							
7	Cylinder Low Register							
8	Cylinder High Register							
9	Device/Head Register							
10	Command/Status Register							
11	Reserved					DATA	DIR	REGS

Fig. 7a

Byte \ Bit	7	6	5	4	3	2	1	0
0	'S'							
1	'D'							
2	Reserved (Error Register)							
3	Sector Count Register/Feature Register							
4	Sector Register							
5	Cylinder Low Register							
6	Cylinder High Register							
7	Device/Head Register							
8	Command/Status Register							

Fig. 7b

Register	7 (808h)	6 (808g)	5 (808f)	4 (808e)	3 (808d)	2 (808c)	1 (808b)	0 (808a)
Feature (812a)	na							ENB
Sector Count (812b)	na							
Sector Number (812c)	na							
Cylinder Low (812d)	na							
Cylinder High (812e)	na							
Device/Head (812f)	obs	na	Obs	DEV	na			
Command (812g)				D5h				

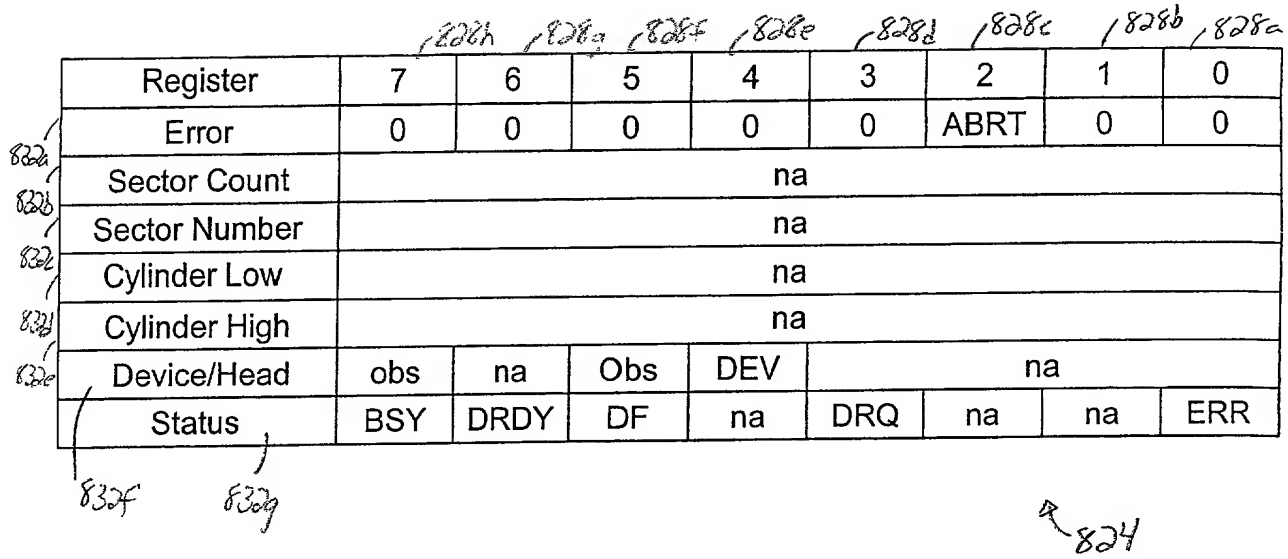
804

Fig. 8a

814

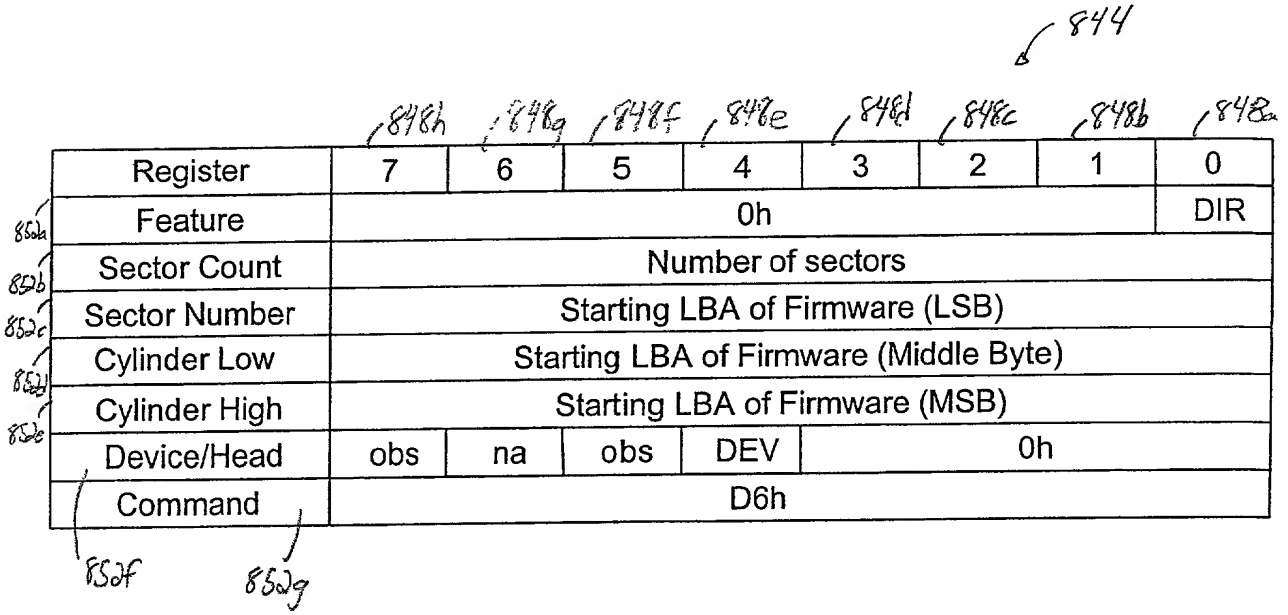
Register	7 (818h)	6 (818g)	5 (818f)	4 (818e)	3 (818d)	2 (818c)	1 (818b)	0 (818a)
Error (822a)	0h							
Sector Count (822b)	55h							
Sector Number (822c)	AAh							
Cylinder Low (822d)	0h							
Cylinder High (822e)	0h							
Device/Head (822f)	obs	na	Obs	DEV	WP	Media Type		
Status (822g)	BSY	DRDY	DF	1	DRQ	0	0	ERR

Fig. 8b



Register	7	6	5	4	3	2	1	0
Error	0	0	0	0	0	ABRT	0	0
Sector Count	na							
Sector Number	na							
Cylinder Low	na							
Cylinder High	na							
Device/Head	obs	na	Obs	DEV	na			
Status	BSY	DRDY	DF	na	DRQ	na	na	ERR

Fig. 8c



Register	7	6	5	4	3	2	1	0
Feature	0h							DIR
Sector Count	Number of sectors							
Sector Number	Starting LBA of Firmware (LSB)							
Cylinder Low	Starting LBA of Firmware (Middle Byte)							
Cylinder High	Starting LBA of Firmware (MSB)							
Device/Head	obs	na	obs	DEV	0h			
Command	D6h							

Fig. 8d

Register	7 (868h)	6 (868g)	5 (868f)	4 (868e)	3 (868d)	2 (868c)	1 (868b)	0 (868a)
Error (872a)	na							
Sector Count (872b)	na							
Sector Number (872c)	na							
Cylinder Low (872d)	na							
Cylinder High (872e)	na							
Device/Head	obs	na	Obs	DEV	na			
Status (872f)	BSY	DRDY	DF	na	DRQ	na	na	ERR

872g
864

Fig. 8e

884

Register	7 (888h)	6 (888g)	5 (888f)	4 (888e)	3 (888d)	2 (888c)	1 (888b)	0 (888a)
Error (892a)	na	UNC	na	na	na	ABRT	na	na
Sector Count (892b)	na							
Sector Number (892c)	Error LBA (LSB)							
Cylinder Low (892d)	Error LBA (Middle Byte)							
Cylinder High (892e)	Error LBA (MSB)							
Device/Head	obs	na	obs	DEV	0h			
STATUS (892f)	BSY	DRDY	DF	na	DRQ	na	na	ERR

892g

Fig. 8f